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ABSTRACT

This paper discusses the beginning of life on Earth, the formation of life forms, evolution, and the origin of life. The paper suggests that how life first appeared on earth is not known and may never be known. (YDS)

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WHAT TEACHERS SHOULD KNOW ABOUT THE EVOLUTION-INTENTIONAL DESIGN DEBATE ON THE ORIGIN OF LIFE

by

Stewart E Brekke

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Every Biology student learns that "life must beget life" at the beginning of the first semester of basic biology. Each and every high school biology text makes it plain and clear that living things cannot come from inanimate objects and that there is no evidence for spontaneous generation of any type. Even before the time of Pasteur to the present every experiment has shown that the principle of biogenesis, that life must come only from life, has been firmly established(Otto and Towle, Modern Biology, 1985, p.25). How life first appeared on earth is not known and may never be known.

Oparin's theory that the atmosphere of the early earth was the site of the origin of life has yet to be proven correct and is really a theory of spontaneous generation with a ring of science to it. Oparin's theory that molecules of ammonia, methane, molecular hydrogen, and water vapor were catalyzed by lightning, ultraviolet light and volcanic heat, into complex organic molecules in an organic soup, later forming amino acids, bases and DNA has been proven in part by Stanley Miller and others, but complex organic molecules and living things are two different things. Despite exhaustive efforts by the most competent researchers, life cannot be produced by the mixture of chemicals under any circumstances yet known no matter how sophistocated.

The fossil record in the pre-Cambrian is sketchy at best and the trail of how living things starts with only living things appearing in the oceans, but how these living cells got there is not known at all. The sudden appearance of eukaryotic cells, cells that contain a nucleus and organelles with membranes, cannot be satisfactorily explained, nor can the appearance of the prokaryotic cells that were the earliest living things be explained in any way except that we now know that the principle of biogenesis is fundamental, that life can only beget life. In the Judeo-Christian religion the explanation for the appearance of living things was the word of God, but other religions have different explanations and to be certain no one to this day, be they scientist or religionist, can satisfactorily explain how life came on earth.

The jump from molecules to cells is so enormous that there must be some other explanation that random molecular combinations in the oceans and atmosphere account for the highly organized metabolic pathways , cell membranes, organelles, nuclear composition and structures,as well as other essential cell elements at least. Not only is the chance of a cell forming from a soup of organic molecules so improbable, but the improbability of the millions of chemical reactions working in concert to keep the cell living as well leads to the idea of some kind of deliberate or preconceived design. For example, it has been estimated that a specific sequence polypeptide chain of 100 amino acids has such a low probability of occurring spontaneously approximating 10 exp.-130. Even with selection the probability is about 1/1900 of occurring.When the

probability of one 100 amino acid sequence is mathematically combined with other factors even selection, the enormous probability against any chemical combination producing a cell, even non-living, is beyond even the most optimistic calculations. The precisely ordered monomer sequences found in proteins and nucleic acids alone, because of their specificity, could not possibly originate from random chemical attraction alone and has to have some kind of nonrandom basis. Proteins are made up of specific linear sequences of amino acids linked by peptide bonds.and they are essential to to living things because of their catalytic functions. Therefore, the origin of these protein molecules cannot be explained with the present state of scientific knowledge and possibly without some kind of deliberate design or mechanism was involved.

It appears that the entire living contingent is based upon one design, the cell. All the cells themselves are fundamentally the same in structure and metabolism. Further, the jump from individual cell to complex organisms with tissues and organs is so enormous that molecular evolution simply cannot account for highly developed life forms and the fossil record does not support large scale changes in life forms. It is true that there is fossil evidence that documents slow evolutionary changes such as in the development of the modern horse, but the evidence for the origin and evolution of mammals on the whole from apparently one mammalian life form during the time of the dinosaurs as is presently thought is not in any way supported by solid evidence. The leap from one small mammal in the age of dinosaurs to horses, elephants and homonids cannot at least at this time be documented at all let alone attributed soley to evolutionary processes..The fossil record at least would be filled with all kinds of disfunctional models of life forms,many more than we have now identified.that have died out due to natural selection if purely random processes were all that was causing the existence of simple and complex living things

Once life forms existed however they appeared on the scene, the changes in the inherited differences of some organisms operated upon by natural selection is well documented by fossil evidence such as in the case of the horse. Almost all the intermediate stages between the Hyracotherium, the forerunner of the modern horse, to Equus, the modern horse, are known. How the Hyracotherium first began its existence on Earth, 60 million years ago, is not known however. The fossil record is incomplete in many instances, and the apparent sudden appearance of various species cannot at least not yet be attributed to some evolutionary process although the evolution of some life forms cannot be questioned. Some ancient organisms have persisted without change since the earliest times on earth such as opossums, alligators, sturgeons, lungfish, horsehoe crabs, and ginko trees. But, besides these rare ancient living relics, in almost every instance fossils differ from present forms of the same life form, and the more recent geological strata illustrate a closer resemblance to present living things than the older strata. Generally speaking, the fossil record

provides good evidence for evolutionary processes of living things (M. Strickberger, Evolution,2nd ed., 52-54), but as for the origin of those same living things, nothing very substantial is known or certain.

The extraterrestrial origin of living things, has been suggested by some prominent scientists such as Crick and Hoyle. Originally, the idea of some kind of "spore" floating in space carrying the seeds of life was proposed and later rejected based partly on the existence of intense life killing radiation from the sun and other stars in space. The proponents of the extraterrestrial view point to the existence of organic compounds in carbon-containing meteorites ranging from carbohydrates to various amino acids. Amino acids are the building blocks of proteins, molecules essential to all life forms on earth, but detailed analysis of these amino acids has shown a racemic mixture of two types of optical activity having no total optical activity. Living things generally contain amino acids of only one type, levorotary optical activity. This fact, and some others, seem to indicate that the existence of these organic compounds were formed through random chemical reactions in the meteorite or in its larger original form. (Strickberger, p.114) and not on some other planet. The extra-terrestrial origin of life forms overcomes both the difficulty of the chemical explanation of life on earth and both the religious and scientific creation hypotheses of life forms here on earth. However, the distant origin of such life is still not explained. (Strickberger, p.113).

Under our present state of knowledge and scientific capacity to understand the origin of life and the origin of present day life forms, it is highly possible that some kind of combination of design or creation and evolutionary processes are involved. The elements of evolution are now well known, but what was part of the design or creation factor is still a mystery. When I teach biology or life science, I always let the students know that the full story of living things is still incomplete and always let them retain their view, be it purely scientific or even purely religious and that no one has the complete answer at this time. The sudden origin of various life forms throughout the history of the earth suggests to me a kind of extraterrestrial origin of some living things including homo sapiens then acted upon by evolutionary factors in the environment. Where these life forms came from or come from is an unknown. We do know from planetary exploration in our solar system, that life seems to only exist on Earth, although in the distant past life of some kind may have existed on Mars and less possibly on Venus before a dramatic change in the planet's Atmosphere. Probably, under the extra-terrestrial theory of the origin of life, life in some form came from another solar system in our galaxy since our solar system has only life on Earth as far as we know, and must have come from a distant planet in some other solar system in some way. In any case the religious view of an earth creation is based on mostly belief. By itself the evolutionary and chemical origin of life is highly improbable by itself and not supported by good certainty at all.In reality it is a kind of "belief" system as the

religious view is also. Although evidence for evolution of life forms is strong, the origin of life by random chemical means is at most an hypothesis. Because of the uncertainty of both the evolutionary-chemical view and the religious creation view there is only one other possibility. This possibility is the extra-terrestrial intentional design hypothesis, a reluctant choice at best, probably from some planet relatively close by the Earth in our Milky Way galaxy. Life forms from a planet in another galaxy coming to Earth are not probable because of the great distances the life forms must travel.

Because of the great complexity of even the smallest and simplest life form
only the hypothesis of the extraterrestrial origin of life on earth, a reluctant default choice, may account for the first living cell, the first horse or the first humanoid. There is no question that a random mix of chemicals is impossible to engender the organelles , metabolic pathways , and the spark of life itself to create even the simplest cell, the foundation of all living things. Even the most competent and sophistocated biochemical research has not come anywhere near creating a true living thing at this time. Further, for a cell to live all elements of the cell must be in place virtually at the same time and the random primordial soup theory of the origin of life simply will not suffice. Certainly, religious creationism cannot account for the origin of life since religious creationism ,as all religious concepts, are based on faith, not certainty While there is strong evidence for evolution in the majority of living things now in existence, a small percentage of plants and animals have not evolved very much such as the ginko tree and the armadillo and crocodile. The Oparin primordial soup theory of the origin of life on earth is still a theory and almost pure speculation often taken on faith by scientists as true, which it is not, actually falling into the "spontaneous generation" class of thought. As all high school biology students know" life must beget life." Neither a random mix of non-living chemicals, nor a jar of decaying meat will produce a living thing. Some kind of design must be in the mix of the origin of living things at least on Earth. What the nature of that design is not known and may never be known by humans at all.

However, even the theory of the extra terrestrial origin of life, by intelligent design or whatever, appears to have serious defects .Not one advanced civilization or even any civilizations at all have been detected in any other part of the universe.
If life in fact was created on another planet in the galaxy or even in another part of space such as another galaxy, to get to earth or even to Mars eons ago, the civilization that created it must have been or still is very advanced. It is assumed that these advanced or even similar civilizations to our own and can be detected through their use of radio waves. Through the use of SETI the existence of these radio waves has been sought. Other forms of communication, not presently known to us, or detectable to us at present, such a forms of laser communication, may be the civilization's means of communicating. Unfortunately, in spite of an extensive effort, no positive detection of extraterrestrial radio signals has been found. Our galaxy, the Milky Way, appears to lack any supercivilizations who would be capable of creating and sending life to earth or anywhere else in the galaxy. despite the many searches of various sophistications, out to as far as 40,000 light years. The failure of this endeavor to detect any extra terrestrial radio signals over many years of investigation has begun to worry many scientists. The lack of evidence for the existence of extraterrestrial intelligence either in space via their radio transmissions and the failure to confirm that extraterrestrials have ever visited earth makes any attempt to ascribe the origin of life on earth especially to another civilization on some planet elsewhere in space difficult to support. It may be that life on earth may even be the only place life exists in the entire universe.

In view of this sobering situation that we may indeed be the only planet in the entire universe with advanced civilizations and/or life forms, we should take stock of our unique situation. We must make an extensive and determined effort to save from extinction all species of life now on the planet. We must start to deal with each other more respectfully and humanely making certain that all creatures great and small can live and reproduce. They must continue to exist and flourish for all of us from human to the smallest bacteria may be the seed that may populate the rest of the habitable universe.

In conclusion the true origin of life on earth is still a matter of speculation. It is possible that a number of advanced extraterrestrial civilizations in the galaxy have risen and fallen, say due to supernova activity

for example, and did seed our planet even with primitive forms of life and let evolutionary processes develop into the various life forms that have existed on this planet. But, there is no radio trace of any extraterrestrial life. Nor is there any evidence that they, if they indeed do now exist or have existed in the past, either visited earth or sent either primitive or advanced life forms by any means whatever. Therefore, the question remains as to the origins of life forms on Earth some of which later developed into the different life forms we now know about. (I. Crawford, p.38-40). In fact, we still do not have enough information to determine when, how or where life on Earth began or how the many species of life today have originated in the past either through some kind of creation, evolution or combination of the two processes. We therefore need to preserve all life forms and treat each other with greater humanness so that we all may participate in what may be the highest organization of matter in all of the universe life on earth.

Ian Crawford, "Where Are They?", The Scientific American, v.283 no.1 (July, 2000), p.38-40.

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